

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 March 2002 (28.03.2002)

PCT

(10) International Publication Number
WO 02/025387 A3

(51) International Patent Classification⁷: **G05B 19/042**

(21) International Application Number: PCT/US01/29341

(22) International Filing Date:
19 September 2001 (19.09.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/233,924 20 September 2000 (20.09.2000) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US 60/233,924 (CIP)
Filed on 20 September 2000 (20.09.2000)

(71) Applicant (for all designated States except US): **LOCKHEED MARTIN CORPORATION** [US/US]; 6801 Rockledge Drive, Bethesda, MD 20817 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RAPP, John, W.**

[US/US]; 9350 River Crest Road, Manassas, VA 20110 (US). **MATHUR, Chandan** [US/US]; 9913 Manet Road, Burke, VA 22015 (US). **LANE, Paul, Todd** [US/US]; 7813 Piccadilly Drive, Warrenton, VA 20110 (US).

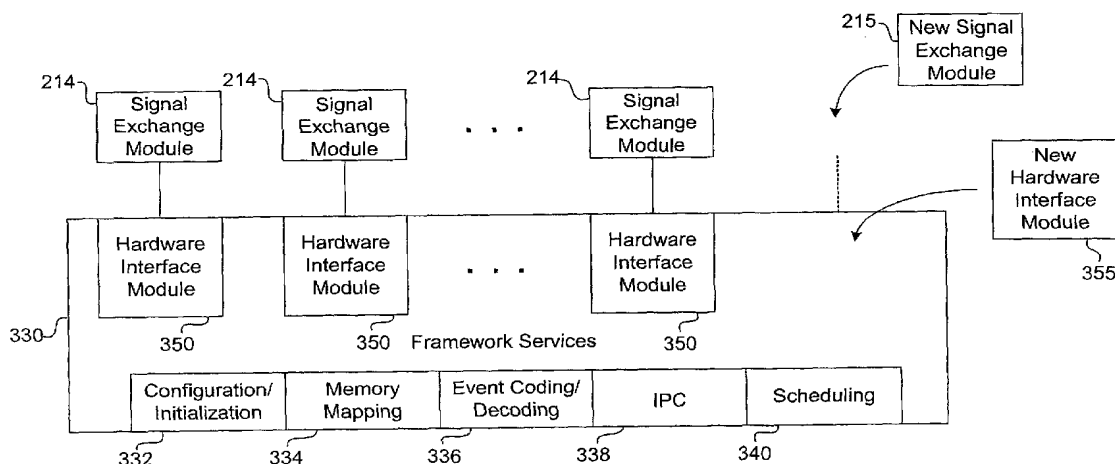
(74) Agents: **SANTARELLI, Bryan, A.** et al.; Graybeal Jackson Haley LLP, Suite 350, 155 108th Avenue NE, Bellevue, WA 98004-5901 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,

[Continued on next page]

(54) Title: OBJECT ORIENTED FRAMEWORK ARCHITECTURE FOR SENSING AND/OR CONTROL ENVIRONMENTS



(57) Abstract: An object oriented framework architecture for sensing and/or control environments includes a set of sensing and/or control subsystems; a framework and interface system; a network; and a managing server system. The framework and interface system includes signal exchange modules that communicate with sensing and/or control elements; an expansion bus; and a client computer system. A framework services module within the client computer system retrieves configuration information that characterizes signal exchange modules. The framework services module automatically configures hardware interface modules for communicating with signal exchange modules, and maps signal exchange modules' hardware signals to corresponding events. An event may include an event identifier and a data value. The framework services module exchanges events with application software within the managing server system, and exchanges hardware signals with signal exchange modules monitoring or controlling sensing and/or control elements. The framework services module disassociates application software from signal exchange module hardware configuration details.



WO 02/025387 A3



CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
30 January 2003

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Int: I Application No
PCT/US 01/29341

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G05B19/042

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 19782 A (ROSEMOUNT INC) 22 April 1999 (1999-04-22) figures 1-8 page 4, line 23 -page 11, line 29 page 13, line 26 -page 15, line 27 page 20, line 11 -page 23, line 31	1-6, 10-36
Y	---	7-9
Y	EP 0 871 129 A (IBM) 14 October 1998 (1998-10-14) column 4, line 3 - line 24; figure 1	7
Y	US 6 076 124 A (LAKE HAROLD ET AL) 13 June 2000 (2000-06-13) column 5, line 34 -column 6, line 64; figure 2A	8,9

	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

1 November 2002

Date of mailing of the international search report

08/11/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Cîrîc, G

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 01/29341

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 469 150 A (SITTE HANS J) 21 November 1995 (1995-11-21) figures 1,3,5-8,11 column 7, line 8 -column 8, line 23 column 9, line 16 -column 10, line 51 column 11, line 46 -column 13, line 25 column 15, line 18 - line 61 column 17, line 34 - line 48 ----	1-6, 10-36
X	US 5 469 361 A (MOYNE JAMES R) 21 November 1995 (1995-11-21) figures 1,2,5,6A,6B column 4, line 27 -column 6, line 61 column 10, line 15 -column 14, line 48 column 23, line 18 - line 67 ----	1-6, 10-36
X	US 5 212 645 A (HAYASHI STEVEN R ET AL) 18 May 1993 (1993-05-18) figures 1,3,5,9 column 3, line 42 -column 4, line 49 column 5, line 44 -column 6, line 19 column 7, line 25 -column 8, line 10 column 9, line 33 -column 11, line 17 ----	1-6, 21-24, 27,31-36
X	DE 197 48 536 A (DAIMLER BENZ AG ;IBM (US)) 12 May 1999 (1999-05-12) figures 1,2,6-8,13 column 1, line 49 -column 2, line 29 column 4, line 2 -column 5, line 37 column 7, line 50 -column 9, line 65 column 12, line 55 -column 13, line 36 ----	1,21,27, 31,34
A	EP 1 022 631 A (ABB RESEARCH LTD) 26 July 2000 (2000-07-26) the whole document ----	1,21,27, 31,34
A	WO 99 10784 A (HONEYWELL INC) 4 March 1999 (1999-03-04) the whole document -----	1,21,27, 31,34

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/29341

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9919782	A	22-04-1999	AU 9795598 A BR 9812913 A CA 2306767 A1 CN 1273647 T EP 1023650 A1 JP 2001520413 T WO 9919782 A1 US 6370448 B1	03-05-1999 08-08-2000 22-04-1999 15-11-2000 02-08-2000 30-10-2001 22-04-1999 09-04-2002
EP 0871129	A	14-10-1998	CN 1196525 A EP 0871129 A2 JP 3251903 B2 JP 10289197 A SG 70629 A1 TW 384445 B	21-10-1998 14-10-1998 28-01-2002 27-10-1998 22-02-2000 11-03-2000
US 6076124	A	13-06-2000	CA 2187590 A1 DE 69611966 D1 DE 69611966 T2 EP 1041476 A2 EP 1041477 A2 EP 1041478 A2 EP 0772107 A2 EP 0862755 A1 EP 0862756 A1 JP 9222906 A WO 9719396 A1 WO 9719397 A1 US 6183289 B1 US 6324607 B1 US 6418499 B1 US 6033257 A US 6008985 A	11-04-1997 12-04-2001 19-07-2001 04-10-2000 04-10-2000 04-10-2000 07-05-1997 09-09-1998 09-09-1998 26-08-1997 29-05-1997 29-05-1997 06-02-2001 27-11-2001 09-07-2002 07-03-2000 28-12-1999
US 5469150	A	21-11-1995	NONE	
US 5469361	A	21-11-1995	NONE	
US 5212645	A	18-05-1993	CA 2046764 A1 DE 4115825 A1 FR 2664996 A1 GB 2246209 A ,B JP 6089110 A	20-01-1992 23-01-1992 24-01-1992 22-01-1992 29-03-1994
DE 19748536	A	12-05-1999	DE 19748536 A1 US 6336128 B1	12-05-1999 01-01-2002
EP 1022631	A	26-07-2000	EP 1022630 A1 EP 1022631 A2 WO 0043846 A2 WO 0043845 A1	26-07-2000 26-07-2000 27-07-2000 27-07-2000
WO 9910784	A	04-03-1999	US 6317638 B1 AU 739970 B2 AU 9024498 A CN 1267372 T EP 1004061 A2 JP 2001519554 T	13-11-2001 25-10-2001 16-03-1999 20-09-2000 31-05-2000 23-10-2001

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 01/29341

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9910784 A		WO 9910784 A2	04-03-1999